

1                   **STIRRING DEVICE FOR A DISCHARGE PROCESSING MACHINE**

2                   BACKGROUND OF THE INVENTION

3           1. Field of the Invention

4                   The present invention relates to a stirring device, and more particularly to a  
5                   stirring device for a discharge processing machine to stir up the processing particles in  
6                   the processing liquid received in a tank of the discharge processing machine, such that  
7                   the processing particles are evenly spread on a workpiece being processed.

8           2. Description of Related Art

9                   A discharge processing machine is used to process a molded product to have the  
10                  product surface covered with evenly distributed particles. The addition of the particles is  
11                  to increase the fine surface effect of the molded product. Thus, after the process of the  
12                  discharge processing machine, the molded product surface is smooth and extremely fine.  
13                  Although the addition of the specific particle in the processing liquid is able to increase  
14                  the surface effect of the molded product, the concentration of the added particles in the  
15                  processing liquid has great disadvantage to the discharge effect. As a result of being not  
16                  soluable in the processing liquid, the added particle concentration in the processing  
17                  liquid is increased gradually. That is, due to the gravity effect on the particles, the  
18                  processing particles descend to the processing liquid tank and only a small amount of  
19                  processing particles is suspended in the processing liquid. Therefore, the discharge  
20                  processing effect to the product immersed in the processing liquid is not as good as  
21                  expected.

22                  Furthermore, when a period of time has passed with the discharge processing  
23                  machine not having been used, the added particles entirely descend to the bottom of the  
24                  processing liquid tank. Therefore, before restarting the discharge processing machine,  
25                  manual work is required to stir up the descended particles in the processing liquid so as

1 to accomplish the even discharge effect of the discharge processing machine.

2 To overcome the shortcomings, the present invention tends to provide an  
3 improved stirring device to mitigate the aforementioned problems.

4 **SUMMARY OF THE INVENTION**

5 The primary objective of the present invention is to provide an improved  
6 stirring device to help stir up the descended particles in the processing liquid so as to  
7 accomplish the even discharge effect of the discharge processing machine.

8 Other objects, advantages and novel features of the invention will become more  
9 apparent from the following detailed description when taken in conjunction with the  
10 accompanying drawings.

11 **BRIEF DESCRIPTION OF THE DRAWINGS**

12 Fig. 1 is a schematic view showing the application of the stirring device with the  
13 discharge processing machine;

14 Fig. 2 is a schematic view showing the application of the stirring device with a  
15 different type of discharge processing machine; and

16 Fig. 3 is a schematic view showing the operational status of the stirring device  
17 cooperated with the discharge processing machine.

18 **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

19 With reference to Fig. 1, the discharge processing machine cooperated with the  
20 stirring device of the present invention includes a discharge unit (1) for providing  
21 electrical discharge to a product to be processed, a processing unit (10) for providing  
22 electrodes to the product so that the product is electrical-discharge processed, a tank (12)  
23 for receiving therein processing liquid and processing particles and a recycling tube (13)  
24 for recycling the processing liquid from the tank (12).

25 The stirring device (2) constructed in accordance with the present invention

1 includes an air output device (20) and a high pressure tank (21) preferably containing  
2 therein nitrogen.

3 The air output device (20) is a hollow body received in the tank (12) and  
4 provided with multiple air holes (201) defined through a surface of the hollow body. The  
5 air output device (20) is connected to and communicated with the high pressure tank (21)  
6 by a connection tube (22). The high pressure tank has a first pressure gauge (212) to  
7 show the air pressure in the high pressure tank (21), a second pressure gauge (213) to  
8 show the air pressure flowing out of the high pressure tank (21) and a connector (211) in  
9 connection with the connection tube (22). A unidirectional valve (23) controlled by a  
10 controller (11) of the discharge processing machine is provided in the connection tube  
11 (22) to control whether the air in the high pressure tank (21) flows to the air output  
12 device (20). An auxiliary filtering device (14) may be added to communicate with the  
13 tank (12) so as to help the even distribution of the added particles in the tank (12).

14 With reference to Fig. 2, it is noted that the connection tube (22) is in  
15 communication with the recycling tube (13).

16 With reference to Fig. 3, when the stirring device is cooperated with the  
17 discharge processing device, the controller (11) opens the unidirectional valve (23) to  
18 allow the air to flow out of the high pressure tank (21). In the meantime, the first  
19 pressure gauge (212) indicates the air pressure in the high pressure tank (21) and the  
20 second pressure gauge (213) indicates the air pressure flowing out of the high pressure  
21 tank (21). Subsequently, the air flowing out of the high pressure tank (21) flows to the  
22 air output device (20) and into the air holes (201) to stir up the processing liquid in the  
23 tank (12).

24 As well known in the art, after the addition of air in a liquid, the liquid is stirred  
25 such that the processing particles in the processing liquid in the tank (12) are evenly

1 distributed. As a result of even distribution of the processing particles in the tank, the  
2 electrical discharge processing procedure to the product is able to be accomplished  
3 evenly.

4 It is to be understood, however, that even though numerous characteristics and  
5 advantages of the present invention have been set forth in the foregoing description,  
6 together with details of the structure and function of the invention, the disclosure is  
7 illustrative only, and changes may be made in detail, especially in matters of shape, size,  
8 and arrangement of parts within the principles of the invention to the full extent  
9 indicated by the broad general meaning of the terms in which the appended claims are  
10 expressed.